FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 5 to April 11, 2015 (week 14)

Overall Summary

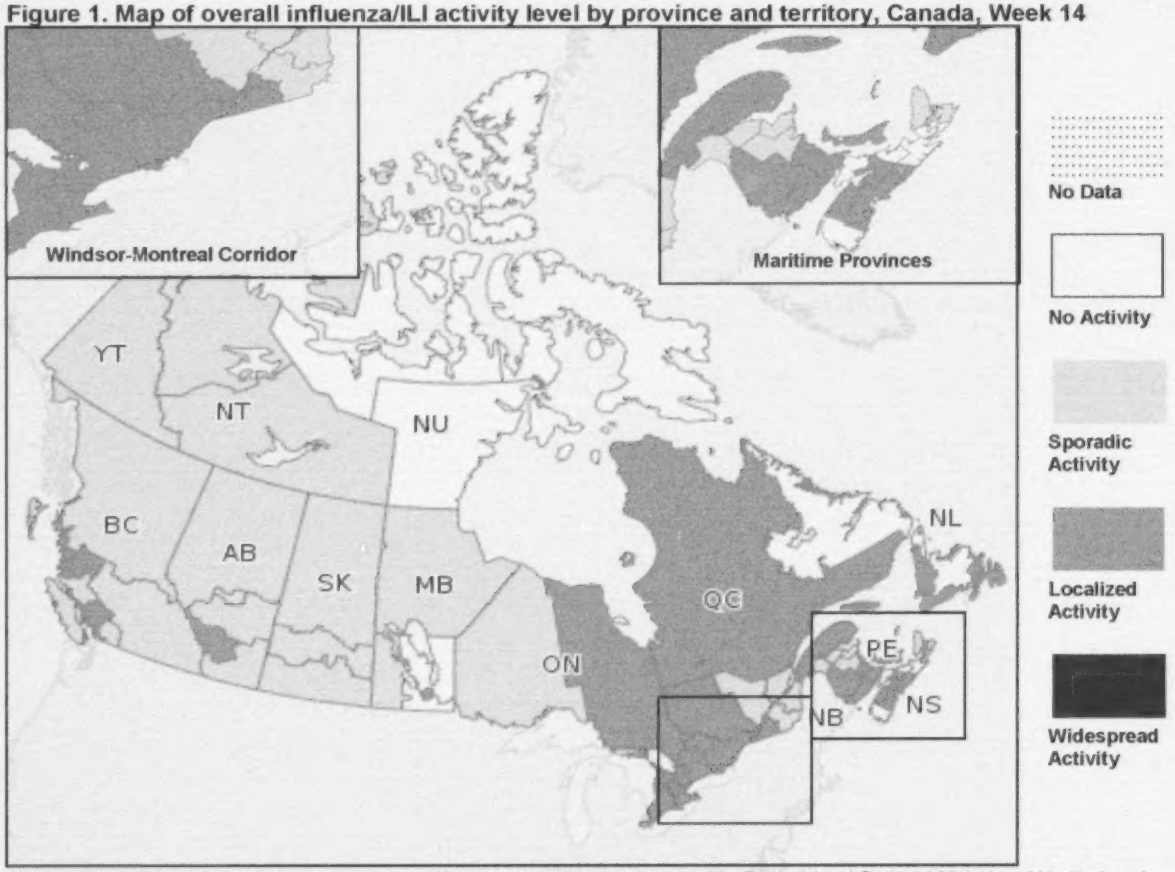
- In week 14, influenza B continued to be the predominant influenza virus circulating in all provinces and territories.
- The number of influenza A and B detections remained similar to the previous week. Other circulating respiratory viruses continue to decrease with the end of the 2014-15 flu season approaching.
- Influenza B is having a greater impact on adults less than 65 years of age, compared to influenza A(H3N2), which circulated earlier in the season.
- Evidence from the National Microbiology Laboratory (NML) indicates that this year's vaccine will continue to provide protection against the circulating A(H1N1) and B strains.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/ILI Activity (geographic spread)

In week 14, no regions reported widespread activity. Twenty-three regions reported localized activity: BC, AB, MB, ON(6), QC(4), NB(3), NS(4), PE and NL(2). Twenty-four regions reported sporadic activity: in YK, NT(2), BC(4), AB(4), SK(3), MB(2), ON. QC(2), NB(4), and NS. Eleven regions reported no activity: NU(3), MB(2), NS(4), and NL(2).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 14

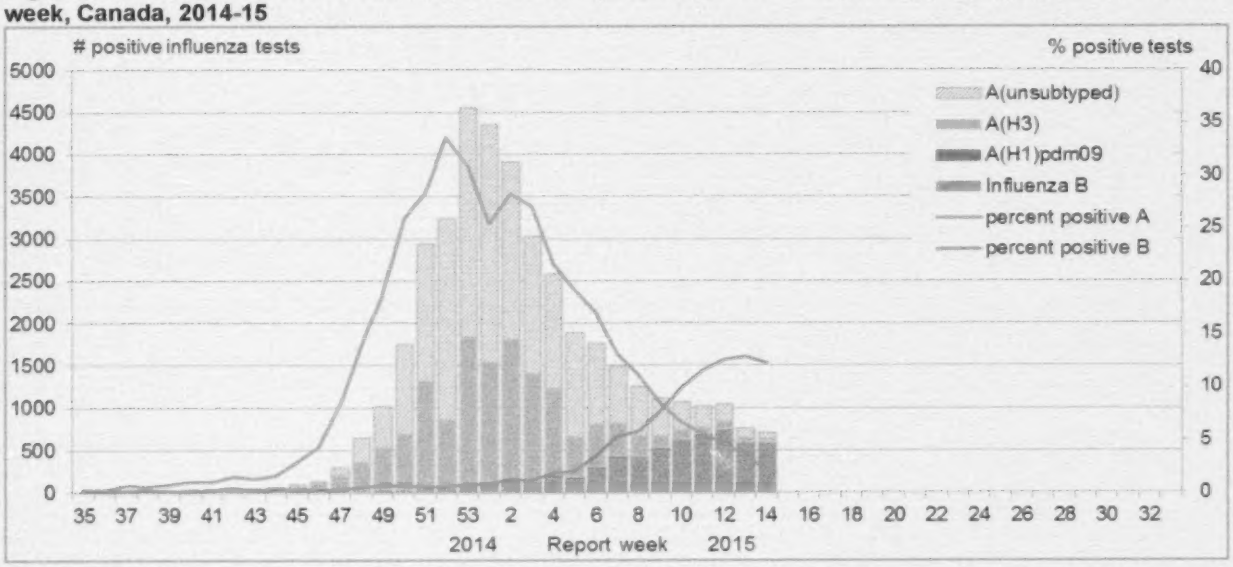


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

In week 14, the percentage positive for influenza A (2.2%) and B (12.2%) declined from the previous week (Figure 2). Influenza B detections were greater than influenza A in all provinces. More influenza B has been observed to date this season (6,130) compared to the same time during the 2013-14 season (5,027). To date, 85% of influenza detections have been influenza A, and 99.3% of those subtyped have been A(H3N2) (Table 1). To date this season, detailed information on age and type/subtype has been received for 35,137 cases (Table 2). Adults ≥65 years of age have predominantly been affected by influenza A, accounting for 62% of influenza A detections. Influenza B, while much smaller in numbers, is mainly affecting individuals less than 65 years of age, they account for 60% of influenza B detections.

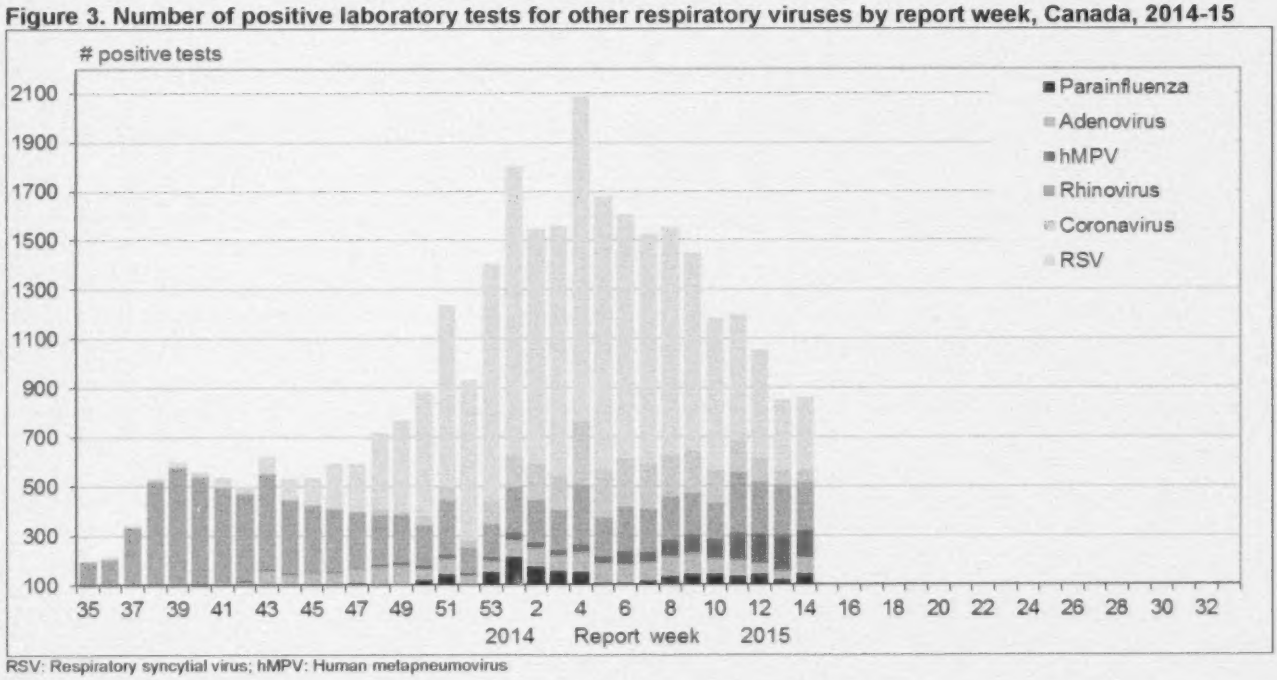
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2014-15



In week 14, detections for all other respiratory viruses remained similar to, or decreased from, the previous week (Figure 3). Overall, the detections of other respiratory viruses have been declining since peaking in week 5.

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2014-15



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2014-15

Reporting provinces[1]	Weekly (April 5 to April 11, 2015)					Cumulative (August 24, 2014 to April 11, 2015)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	3	0	0	3	21	3498	25	2603	870	342
AB	6	0	4	2	46	3686	13	3519	154	758
SK	0	0	0	0	9	1312	0	839	473	176
MB	0	0	0	0	16	1121	0	390	731	119
ON	43	0	25	18	110	11077	43	4659	6375	884
QC	24	0	0	24	271	11376	4	422	10950	3119
NB	26	0	3	23	72	1173	0	183	990	390
NS	2	0	0	2	14	505	0	123	382	239
PE	2	0	2	0	12	123	1	120	2	74
NL	1	0	0	1	5	613	0	123	490	29
Canada	**107**	**0**	**34**	**73**	**576**	**34484**	**86**	**12981**	**21417**	**6130**
Percentage[2]	15.7%	0.0%	31.8%	68.2%	84.3%	84.9%	0.2%	37.6%	62.1%	15.1%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2014-15

Age groups (years)	Weekly (April 5 to April 11, 2015)					Cumulative (August 24, 2014 to April 11, 2015)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	5	0	1	4	32	2081	19	807	1255	392	2473	7.0%
5-19	3	0	1	2	31	1775	6	953	816	577	2352	6.7%
20-44	3	0	2	1	36	3426	16	1659	1751	804	4230	12.0%
45-64	6	0	3	3	74	3845	17	1646	2182	1354	5199	14.8%
65+	25	0	8	17	188	18637	13	7232	11392	2120	20757	59.1%
Unknown	0	0	0	0	0	121	0	100	21	5	126	0.4%
Total	42	0	15	27	361	29885	71	12397	17417	5252	35137	100.0%
Percentage[2]	10.4%	0.0%	35.7%	64.3%	89.6%	85.1%	0.2%	41.5%	58.3%	14.9%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Antiviral Resistance

During the 2014-2015 influenza season, the NML has tested 1,197 influenza viruses for resistance to oseltamivir and 1,192 influenza viruses for resistance to zanamivir. All viruses were sensitive to zanamivir and one influenza A(H3N2) virus was resistant to oseltamivir. A total of 1,284 influenza A viruses (99.9%) were resistant to amantadine (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2014-15

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	846	1	843	0	1275	1274 (99.9%)
A (H1N1)	9	0	9	0	10	10 (100%)
B	342	0	340	0	NA[1]	NA[1]
TOTAL	1197	1	1192	0	1285	1284

[1]NA: Not Applicable

Influenza Strain Characterizations

During the 2014-2015 influenza season, the National Microbiology Laboratory (NML) has characterized 611 influenza viruses [179 A(H3N2), 10 A(H1N1) and 422 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assay (n=179), one virus was antigenically similar to A/Texas/50/2012, five showed reduced titers to A/Texas/50/2012 and 173 were antigenically similar to A/Switzerland/9715293/2013, which is the influenza A(H3N2) component recommended for the 2015 Southern Hemisphere influenza vaccine. Additionally, 1,054 A(H3N2) viruses were unable to be tested by HI assay; however, sequence analysis showed that 1,052 belonged to a genetic group that typically shows reduced titers to A/Texas/50/2012. **Influenza A(H1N1):** Ten A(H1N1) viruses characterized were antigenically similar to A/California/7/2009. **Influenza B:** Of the 422 influenza B viruses characterized, 400 viruses were antigenically similar to B/Massachusetts/2/2012, three viruses showed reduced titers against B/Massachusetts/2/2012, and 19 were B/Brisbane/60/2008-like (Figure 4).

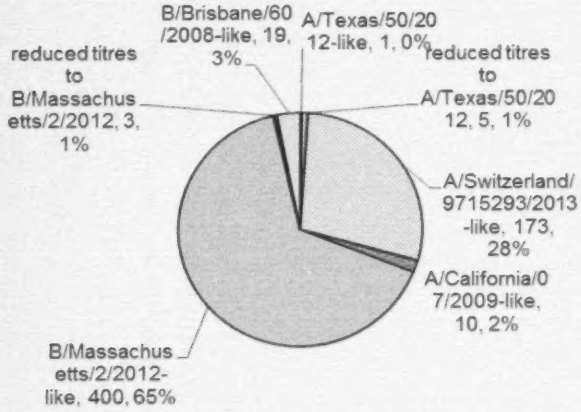

B/Brisbane/60 /2008-like, 19, 3%
A/Texas/50/20 12-like, 1, 0%
reduced titres to B/Massachus etts/2/2012, 3, 1%
reduced titres to A/Texas/50/20 12, 5, 1%
A/Switzerland/ 9715293/2013 -like, 173, 28%
A/California/0 7/2009-like, 10, 2%
B/Massachus etts/2/2012-like, 400, 65%

Figure 4. Influenza strain characterizations, Canada, 2014-15, N = 611

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

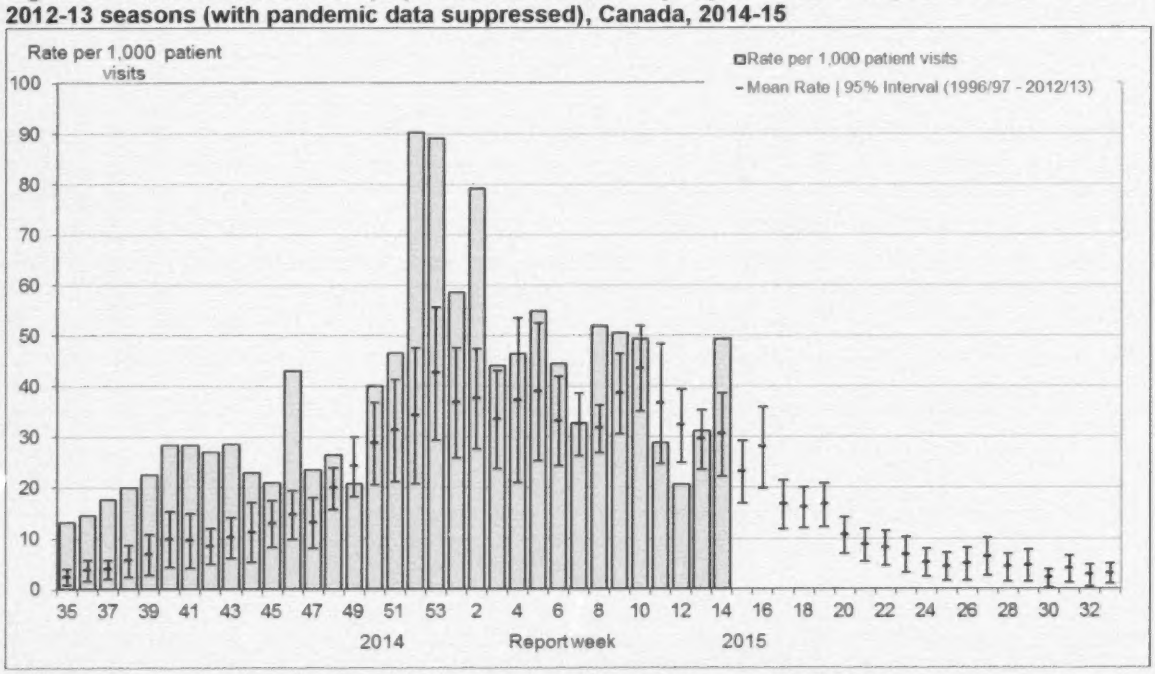
The recommended components for the 2014-2015 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Texas/50/2012 (H3N2)-like virus, and a B/Massachusetts/2/2012-like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus is recommended.

The WHO has released the recommended composition of the influenza vaccine for the northern hemisphere for the 2015-2016 season. Trivalent vaccines are recommended to contain 1) an A/California/7/2009 (H1N1)pdm09-like virus 2) an A/Switzerland/9715293/2013 (H3N2)-like virus, and 3) an B/Phuket/3073/2013-like virus(Yamagata lineage). Quadrivalent vaccines are recommended to additionally contain a B/Brisbane/60/2008-like virus (Victoria lineage).

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased in week 14 to 49.4 consultations per 1,000, which is above expected levels (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2014-15

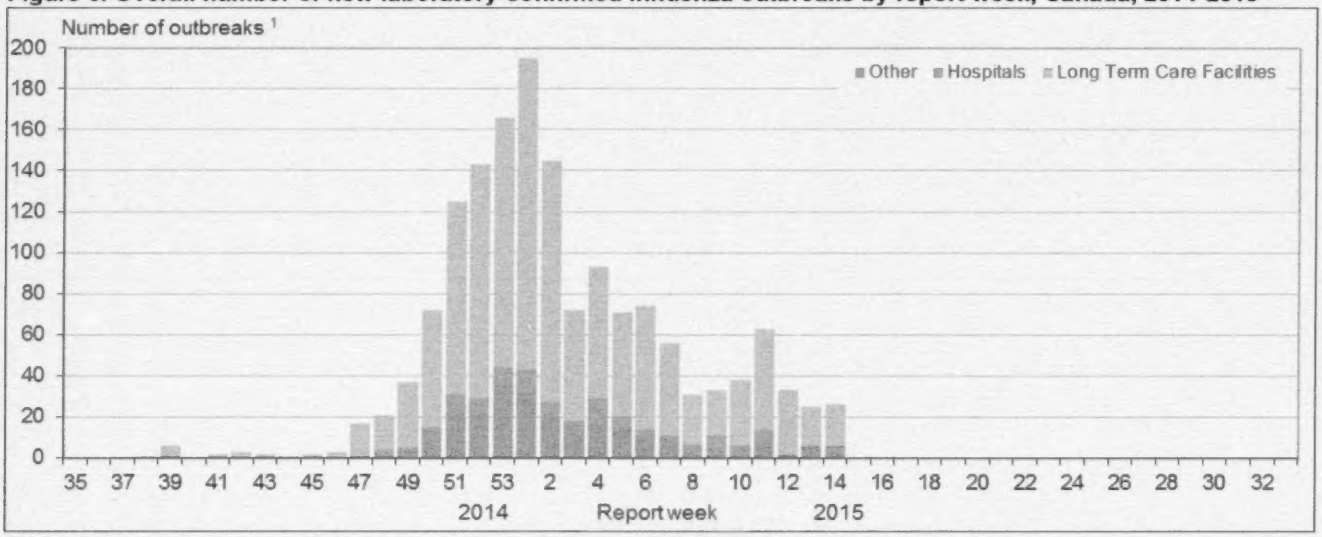


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 14, 26 new outbreaks of influenza were reported. Similar to previous weeks, the majority of the outbreaks occurred in the Central and Atlantic provinces. Twenty outbreaks were reported in long-term care facilities (LTCF), one in hospitals and five in institutional or community settings (Figure 6). Among the outbreaks in which the influenza type was known (n=8), six outbreaks were associated with influenza B. To date this season, 1,212 outbreaks in LTCFs have been reported and the majority of those with known subtypes were attributable to A(H3N2). There have been a higher number of reported influenza outbreaks to date this season compared to the same period in previous seasons.

Figure 6. Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2014-2015

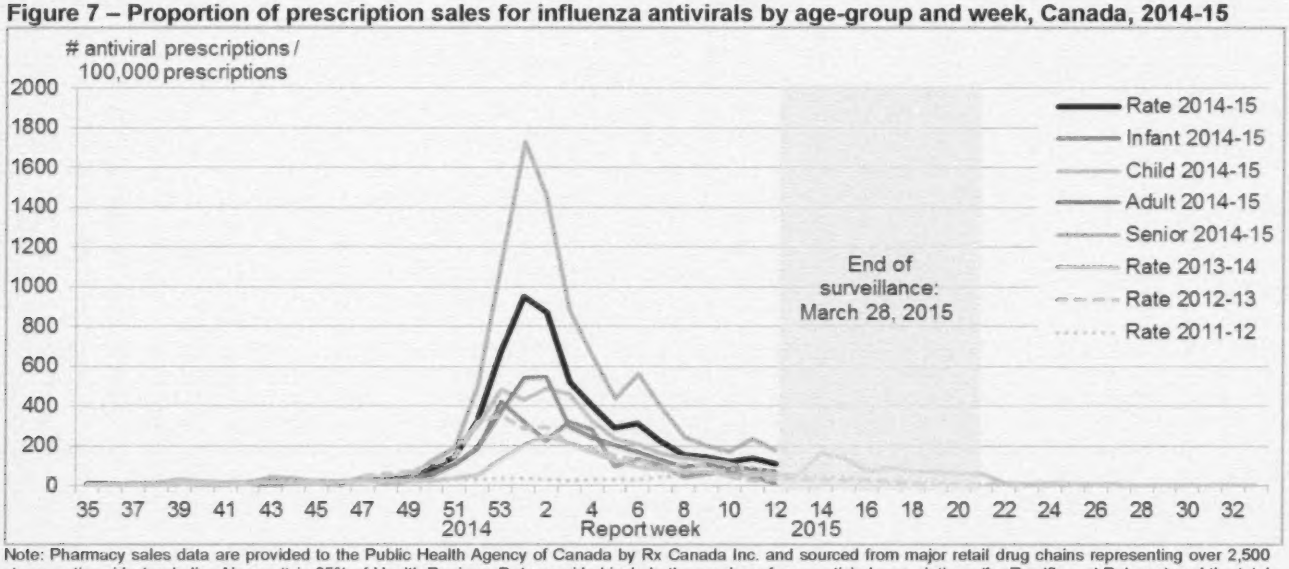


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

Pharmacy surveillance for sales of influenza antivirals has ended for the 2014-2015 influenza season (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2014-15



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 14, 15 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. Fourteen cases were influenza B (Figure 8a). A greater proportion of cases have been reported with influenza B in recent weeks, following the trend in laboratory detections. Among the reported cases, one (7%) was <2 years of age, ten (67%) were 2 to 9 years of age and four (27%) were 10-16 years of age. One ICU admission was reported.

To date this season, 643 hospitalizations have been reported by the IMPACT network, 502 (80%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 99% (162/164) were A(H3N2) (Table 4). To date, 82 cases were admitted to the ICU, of which 45 (55%) were 2 to 9 years of age (Figure 9a). A total of 54 ICU cases reported to have at least one underlying condition or comorbidity. Four deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 14, 30 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network. Among the cases in week 14, 21 cases (70%) were in adults over the age of 65 and 23 cases (77%) had influenza B (Figure 8b).

To date this season, 2,147 cases have been reported; 1,896 (88%) with influenza A. The majority of cases (82%) were among adults ≥65 years of age (Table 5). One hundred and fifty seven ICU admissions have been reported and 119 cases were adults ≥65 years of age. Among the 157 ICU admissions, 15 were due to influenza B (seven in adults 45 to 64 years of age and eight in adults over the age of 65). A total of 111 ICU cases (71%) reported to have at least one underlying condition or comorbidity. Of the 120 ICU cases with known immunization status, 38 (32%) reported not having been vaccinated this season. One hundred and twenty four deaths have been reported, 114 (92%) of the deaths were adults >65 years of age (Figure 9B).

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2014-15

Age groups	Cumulative (24 Aug. 2014 to 11 Apr. 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	81	0	18	63	8	89 (13.8%)
6-23m	109	1	35	73	29	140 (21.8%)
2-4y	123	1	40	82	32	160 (24.9%)
5-9y	129	0	44	85	33	167 (26.0%)
10-16y	60	0	25	35	25	87 (13.5%)
Total	502	2	162	338	127	643
% [1]	79.8%	0.4%	32.3%	67.3%	20.2%	100.0%

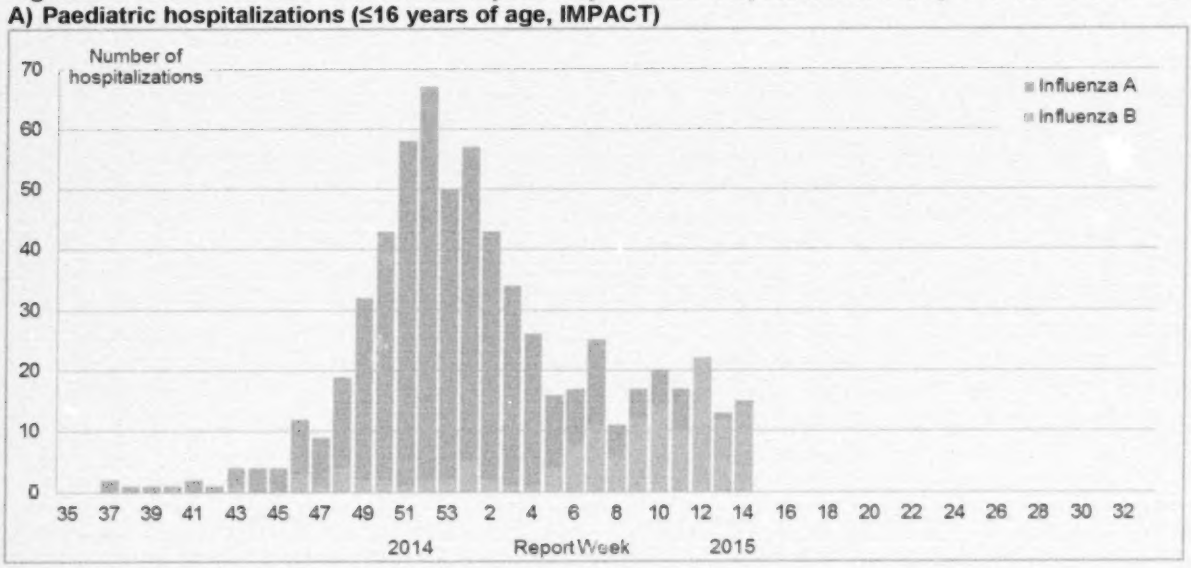
Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2014-15

Age groups (years)	Cumulative (15 Nov. 2014 to 11 April 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	3	0	1	2	1	4 (%)
20-44	105	1	55	49	12	117 (5%)
45-64	214	2	94	118	61	275 (13%)
65+	1574	3	749	822	177	1751 (82%)
Total	1896	6	899	991	251	2147
%	88%	0%	47%	52%	12%	100%

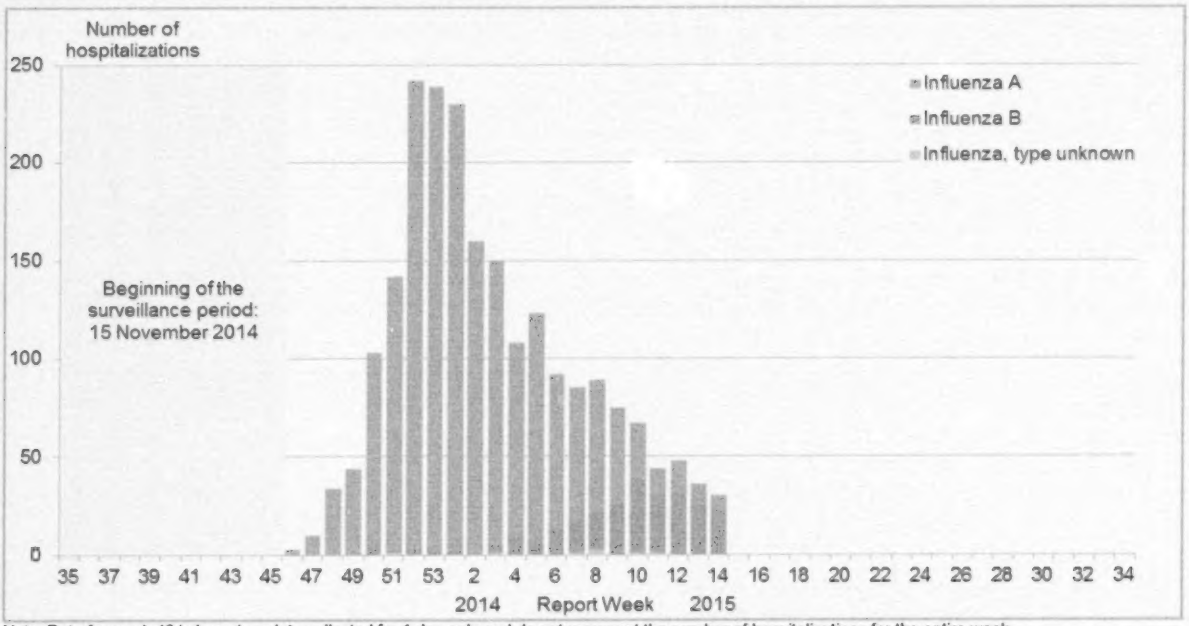
[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2014-15

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



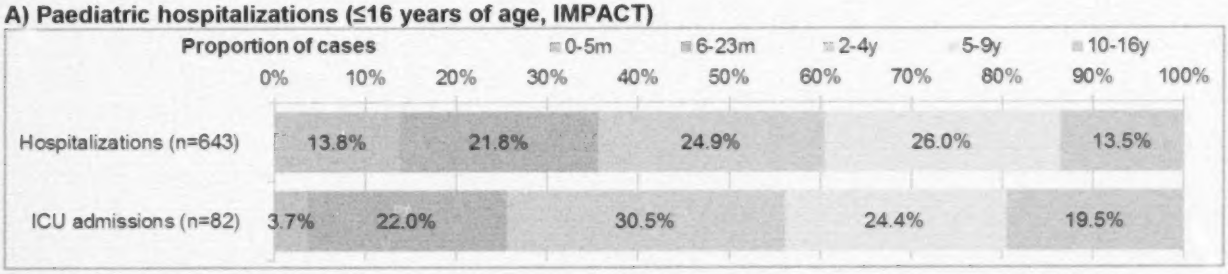
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



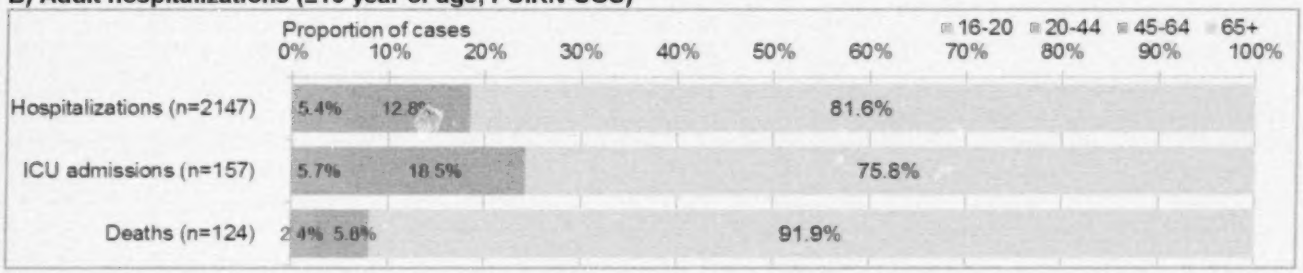
Note: Data for week 46 is based on data collected for 1 day only and do not represent the number of hospitalizations for the entire week.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2014-15

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 14, 122 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*, which is similar to the number reported the previous week. Of the 122 hospitalizations, 84 (69%) were due to influenza A and 78 (64%) were in patients ≥65 years of age.

Since the start of the 2014-15 season, 6,847 hospitalizations have been reported; 6,195 (91%) with influenza A. Among cases for which the subtype of influenza A was reported, 99.5% were A(H3N2). The majority of cases (71%) were ≥65 years of age (Table 6). A total of 358 ICU admissions have been reported to date: 53% (n=190) were in adults ≥65 years of age and 33% (n=119) were in adults 20-64 years. A total of 511 deaths have been reported since the start of the season: four children <5 years of age, three children 5-19 years, 41 adults 20-64 years, and 463 adults ≥65 years of age. Adults 65 years of age or older represent 91% of all deaths reported this season. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2014-15

Age groups (years)	Cumulative (24 Aug. 2014 to 11 Apr. 2015)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	408	2	146	260	51	459 (7%)
5-19	273	2	133	138	72	345 (5%)
20-44	372	3	223	146	78	450 (7%)
45-64	579	4	241	334	85	664 (10%)
65+	4507	2	2109	2396	348	4855 (71%)
Unknown	56	1	52	3	18	74 (1%)
Total	6195	14	2904	3277	652	6847
Percentage[1]	90.5%	0.2%	46.9%	52.9%	9.5%	100.0%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2014-15 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Since the last FluWatch report, 20 new laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus were reported by the World Health Organization. Globally to April 16, 2015, the WHO reported a total of 651 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 225 deaths. Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Influenza A(H5N6): Since the last FluWatch report, no new cases of human infection with avian influenza A (H5N6) virus from China has been reported by the World Health Organization. Globally to April 16, 2015, the WHO has been informed of a total of three cases of avian influenza A (H5N6) virus, including two deaths.

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Since the last FluWatch report, four new laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization. Globally, from September 2012 to April 16, 2015, the WHO has reported a total of 1,106 laboratory-confirmed cases of infection with MERS-CoV, including 421 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East. The public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk) and for the latest global risk assessment posted by the WHO on February 5, 2015: WHO MERS-CoV

Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

Avian Influenza A(H5)

The Canadian Food Inspection Agency (CFIA) is continuing its investigation into an outbreak of highly pathogenic avian influenza H5N2 virus in Oxford County, Ontario . To date, there has been one infected commercial premise. All premises located within the 10 km Avian Influenza Control Zone have been placed under quarantine. No human cases have been reported. Avian influenza viruses do not pose risks to food safety when poultry and poultry products are properly handled and cooked. Avian influenza rarely affects humans that do not have consistent contact with infected birds. Further information on the outbreak is provided on the following CFIA website:

CFIA - Notifiable Avian Influenza

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2014-2015 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = **No activity:** no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = **Sporadic:** sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = **Localized:** (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = **Widespread:** (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.